



IBM Content Manager Takes Aim at e-Business Solutions

The New World of e-Business

In today's economy, virtually every information technology investment is being directed toward a new common purpose – accelerating the transformation of core business processes to handle e-business. The past year has taught us that e-business is not the sole province of New Age dot-com startups, but is also critical to the business strategy of large established companies, from financial services to manufacturing. Today e-business means more than simply creating a marketing presence on the web and taking orders online. It represents a transformation of the entire business process, extending it from the back office to the front office and out to customers, prospects, and partners. It means vastly expanded access to information, enabled by the Internet's unique combination of features: instant availability, universal and global reach, and personalized delivery.

The enlarged community of users enabled by e-business wants to be able to buy goods and services, update their own accounts, get up-to-the-second information, and resolve disputes – all electronically, immediately, with 7x24 availability. With a solid e-business foundation, providers of goods and services need no longer be bound by the constraints and delays of paper-based communications with customers, suppliers, and channel partners, nor proprietary barriers between stovepiped back office operations. The result is that e-business allows companies to develop new products and services faster, increase customer loyalty through superior service, integrate the supply chain more efficiently, and reach a wider market more directly – and more effectively. The new generation of e-business technology is thus transforming not only marketing and sales, but customer relationship management, supply chain management, ERP and critical back office systems, packaged industry applications – even internal collaboration.

Shifting Focus to the Customer

For years the primary goal of technology investment in business has been cost reduction of internal processes, particularly in the back office. The focus has been on making the wheels turn more freely *inside the company*. E-business brings cost reduction, too, but that's not its only benefit. The new boardroom mantra – raise the top line, increase market share, attract and retain customers – is making e-business a strategic imperative by bringing core business operations closer to the customer. E-business is *externally focused*. It enables entirely new ways of acquiring and serving customers, providing more and better information about goods and services, and making it as easy and convenient as possible to conduct business any time, anywhere in the world. And it is also about using the knowledge of the customer acquired in the process to maximize the lifetime value of that customer through superior service and individualized attention.

Disintermediation

One of the biggest cost-saving features of e-business is disintermediation, or elimination of the middleman. Via the web, customers enter their own data, orders, or service requests, eliminating the need for a customer service agent to transcribe data from paper and phone calls into its transaction systems, and reducing the cost of sales reps, brokers, and channel

partners. In return for providing for this free labor, customers receive 7x24 availability, instant response, and immediate confirmation of transaction execution. They gain time, flexibility, and convenience, and can shop online for the best price among competing products and services.

Extending the Business Process

A by-product of disintermediation is extension of the business process beyond the company's walls to include customers and trading partners directly. Before the Internet, all external communications were by paper, fax, or the telephone. Interactions between a company and its customers or partners usually required manual transcription of external communications into the internal workflow, and only the internal portion of the business process could be automated.

With e-business, customers and partners can become direct participants in the company's workflow processes, creating work items via the web, checking status, supplying additional information, and resolving disputes. So can employees throughout the enterprise, in applications as diverse as supplies procurement and HR benefits administration. Not only is the e-business approach more efficient, it is more effective in providing a satisfied customer, partner, or employee.

Content Management in e-Business

E-business requires more than a web site. At its heart, e-business demands integrated access to information across departmental boundaries – and even between companies. This information is not limited to the structured data kept in various databases and backend systems, but includes the wide array of customer communications – applications and order forms, invoices and statements, invoices and shipping documents, correspondence and emails – that enable the transaction and support the customer relationship. In the shift from paper-based commerce to e-business, these documents have not gone away. In e-business, electronic and document-driven processes instead intertwine, so the new challenge for companies is how to integrate paper's digital equivalents, or e-documents, into their e-business strategies.

By providing repositories capable of storing and managing information, both data and documents, in a way that supports the integrated access needs of e-business, *content management technology* has become a critical piece of today's e-business infrastructure. Content management technology provides secure, scalable, storage and management of vast amounts of information, both structured and unstructured, across a wide variety of data types and formats, makes it easily searchable and accessible across the Internet, and integrates it with e-business processes.

IBM Content Manager offering is making it easier for companies to incorporate documents and historical data in a wide array of front office and web self-service applications. Content Manager covers a vast range of content types, from paper and fax to email to statements and invoices to multimedia, providing repositories tailored to the unique characteristics of each type but all accessible through a common API and unified search and retrieval. Moreover, the content repositories are tightly integrated out-of-the-box with leading mission-critical business applications like SAP and Siebel, simplifying customers' transition to e-business by reducing custom development.

Customer Relationship Management

One of the most important applications of content management in e-business is customer relationship management. The goal of e-business in CRM is making customer service reps

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more effective through broader access to customer information, allowing them to provide superior service to customers. In the past, companies have tended to stovepipe separate organizations around each customer communications channel. A customer applying for insurance by phone, for example, would contact the call center, while another customer's paper application would go directly to the mailroom in the back office. An application through the web site would go to a third point of entry. The result of this is three different organizations and business processes for the same business function – perhaps for the same customer! This neither makes sense, nor leads to good customer service.

The goal today is to evolve call centers into multi-channel customer interaction centers, with trained agents dealing with all customer communications whether by phone, mail, fax, e-mail, or the web, armed with an enterprise view of all the customer's various account relationships with the company. To do this, agents in the customer interaction center need desktop access to documents of *all* kinds, including scanned images of paper mail, word processing documents created internally, host-generated statements and invoices, and e-mails, integrated directly with their chosen call center application.

IBM Content Manager solutions can provide agents instant desktop access to scanned forms and correspondence, statements and invoices, and internal revisable documents and e-mail through a common interface.

HR Self-Service

Another leading internal applications of content management in e-business today is Human Resources, particularly benefits administration. Each employee of a company typically has a large HR file, including applications and supporting documentation for a health insurance, life insurance, disability insurance, 401K plans, pensions, and other retirement benefits, stock options, employment agreements, and performance reviews. In the past, frequent updates to the file, such as annual health plan enrollment election, 401K investment choices, even vacation requests, were paper-driven processes, requiring a lot of unproductive labor in the HR department. Employee confirmations and requests for information just added to the HR burden, and service to the employee was often slow and error-prone.

Now allowing employees to directly update and query their employee folder through electronic forms on the corporate intranet can eliminate a large portion of that inefficiency. These forms can use workflow and digital signature technology to enforce business rules and approvals with good security, and interface with backend HR applications such as PeopleSoft. Data can even be sent electronically to partners such as insurance companies. Business rules, such as eligibility for specific benefits, can be calculated automatically, and a confirmation to the employee generated by the system. HR self-service simultaneously offloads the benefits administrators and delivers fast 7x24 service to the employee. Forrester Research estimates that from a standing start in 1998, over half of the Fortune 1000 will have implemented a full-featured HR self-service center by 2001.

Even with web self-service, documents cannot be eliminated from the process. Some require employee signatures by law. Other documents, such as birth certificates, physician statements, and employment agreements, must be maintained as supporting evidence. In the form of digital images, this paper can be made part of the web self-service application, so that employees and managers can query and view these e-documents from the desktop. In addition, third party benefits administrators who provide outsourced management of employee benefits, including storage and indexing of the associated documentation, can now share this documentation with the HR departments of their client companies.

Again, IBM Content Manager provides secure web access to HR documents, and can even be integrated with IBM WebSphere to create an ultra-thin client for extranet access.

Bill and Check Presentment

The most common way most companies communicate with their customers is in the form of the bills and statements they send them each month. Now e-business offers billers the opportunity to leverage the Internet, improve customer service, and at the same time reduce costs. An alternative to traditional printing and mailing, electronic bill presentment and payment (EBPP) provides an interactive channel that allows billers to combine personalized customer care with opportunities for incremental revenue through targeted marketing. At the same time, customers ranging from large corporations to individual consumers receive a quick and easy way to pay bills electronically, and integrate the transactions with their own accounting systems. Research analysts report that EBPP can cut the cost of printing, handling, and mailing a paper bill – which ranges from \$.70 to \$1.50 – by two-thirds.

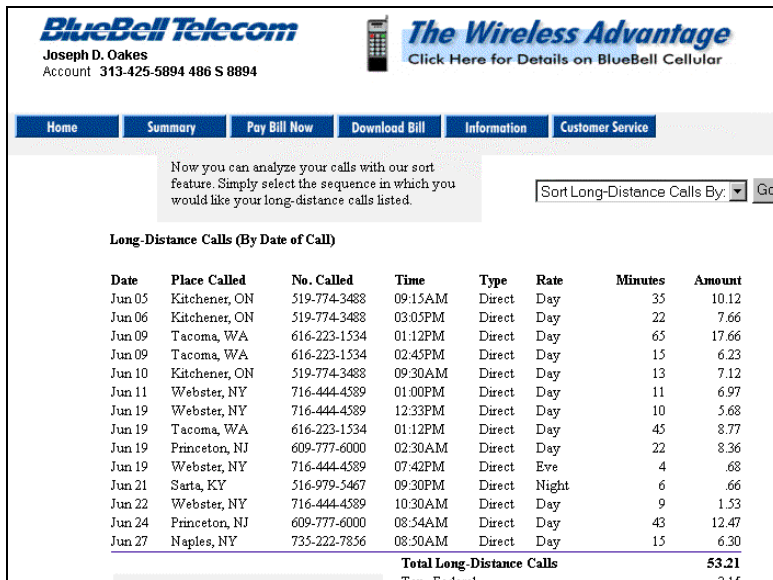


Figure 1. Electronic bill presentment gives users the ability to configure their own information, and provides billers opportunities for one-to-one marketing.

Cost reduction, however, is not the only driver of EBPP. Advanced EBPP products allow consumers, for example, to select how they want their credit card billing information to be presented to them each month, for example sorting items by date or type of expense, or even graphing their spending patterns. At the same time, the server can communicate with external systems, such as data mining and profiling technology, or customer care records, to customize marketing messages and offers as part of the personalized bill or statement.

Content management allows each customer bill or statement to be archived by the biller for customer service and dispute resolution. Using Content Manager’s host output repository, customer service agents – or customers themselves – can search and retrieve bills and statements online, including to a web browser. Repositories of bills and statements are often huge, numbering millions of items online, and require special scalable technology to handle the resulting indexing and retrieval performance requirements.

Check archiving uses similar content management technology in a business-to-business application, forming the basis of advanced cash management services for the customers of large merchant banks, and now streamlining the interbank settlement of checks. Using Content Manager archives, huge volumes of check images can be captured and stored,

supporting online search and retrieval for purposes ranging from research and fraud detection to customer service and statements.

ERP/Financials

Content management is playing a critical role in the e-business transformation of critical backend systems such as ERP and accounts payable. Users of programs like SAP R/3 need access to invoices and supporting documentation directly from within the ERP system, as well as the customer's data history. However, maintaining documents and historical data within the ERP system itself drags down performance and reliability. The answer is data and document archiving, another function of content management. IBM Content Manager provides mySAP users data archiving and integrated document access, improving both SAP system performance and user productivity.

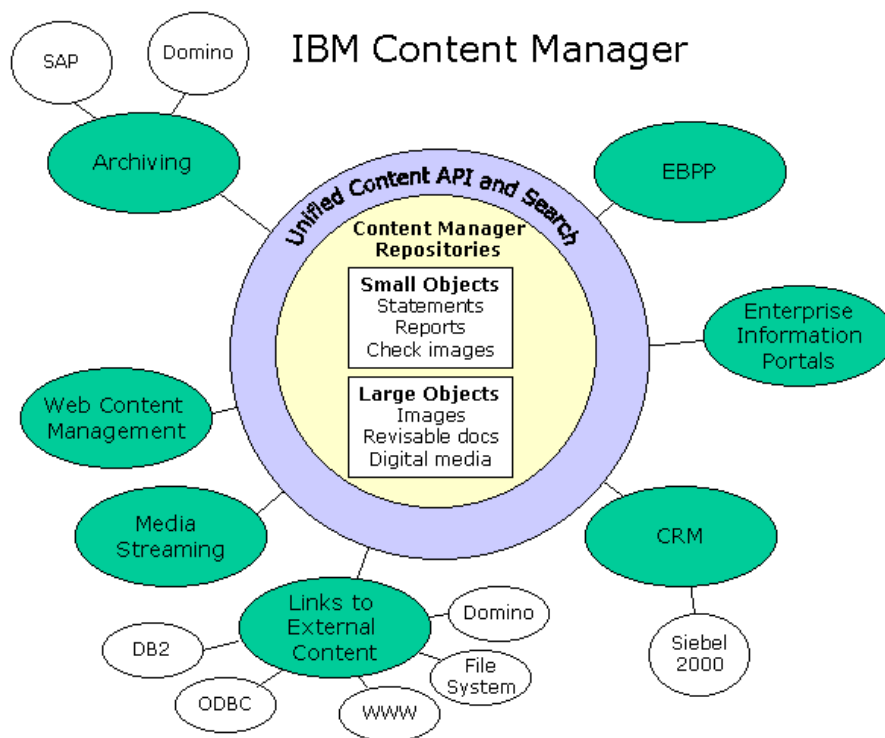


Figure 2. IBM Content Manager surrounds performance-optimized native repositories with unified search and access APIs for use with a wide variety of applications.

IBM Content Manager

Content Manager represents the unification of IBM's proven technologies for managing document images (VisualInfo/ImagePlus), digital multimedia (Digital Library), revisable content (Domino.Doc), host output (OnDemand), and federated searching (EIP), recognizing that e-business demands seamless access to any type of content. The Content Manager strategy revolves around six basic principles:

1. Provide scalable digital repositories optimized for any type of content.

IBM Content Manager provides repositories performance-optimized for both large and small object types. One is designed for large objects such as images, fax, audio and

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video, revisable desktop documents and electronic forms, and the other for smaller objects such as host output, including statements, invoices, and reports, or check images. Both are enterprise-scalable and run a broad range of server platforms.

2. Provide uniform access by business applications to information stored in the Content Manager native repositories – and external data sources as well.

IBM Content Manager delivers information integration capability through a Unified Content API, in C++, Java, or ActiveX, enabling e-business applications with access to any type of content needed to support the business process. Search templates translate the index fields of existing content stores into a common vocabulary used in the query screens, and translates disparate file formats upon retrieval into web-viewable renditions. This gives IBM Content Manager a major advantage over other products that require existing applications to be rewritten in order to take advantage of cross-repository searching, retrieval, and viewing.

The Unified Content API also dramatically simplifies integration of disparate external data sources in enterprise information portals, including portals for customer service, knowledge management, e-commerce, HR, or business intelligence. It allows users to perform queries across virtually any repository, including Content Manager, file systems, web sites, Domino databases, structured data in DB2, Oracle and other relational databases, and business intelligence metadata, consolidating results in a single hit list.

3. Web-enable e-document search and retrieval.

Content Manager offers a new out-of-the-box eClient that provides web-enabled search and retrieval from one or multiple Content Manager repositories. Using Java servlets on a web application server, the eClient provides a firewall-friendly “ultra-thin” client that runs in a web browser, and even allows users to email documents and launch applications for full function viewing as needed.

4. Integrate with industry-leading Customer Relationship Management solutions

Siebel Systems is the market leader in CRM solutions, particularly for large and midsize companies. IBM provides a tight integration of IBM Content Manager with Siebel 2000 eBusiness Applications. The IBM offering provides a unified logon to Siebel Call Center and IBM repositories, one-click access to repository documents from the Siebel desktop, integrated indexing of inbound correspondence from Content Manager queues and linking them with Siebel service requests, automatic creation and archiving of outbound correspondence, and integration of third party image capture subsystems. By document-enabling their familiar call center agent desktop, companies can maximize customer satisfaction and retention with less custom development and training.

5. Provide integrated archive solutions for leading business applications.

IBM Content Manager provides data and document archiving solutions that integrate Content Manager repositories into the mySAP or Domino user environment. Both products significantly improve system performance and reliability of these critical user applications by offloading huge volumes of documents and historical data to the repository, leaving behind just a link for instant retrieval. The SAP version enables prioritized archiving of data as well as incoming or outgoing documents to disk, tape, or optical for performance, and integrates seamlessly via the standard Archivelink interface. The Domino version archives email and entire Notes databases, accessible from either Notes 5 or web clients.

6. Automate business processes that use e-documents.

Workflow makes documents actionable, turning them from simply information into key components of e-business transactions. IBM Content Manager includes basic document processing workflow with native queuing and routing capabilities. For example, a workflow can be automatically initiated upon the arrival of a scanned object, fax or e-form from the web for indexing into Content Manager. In addition, IBM Content Manager links with IBM MQSeries Workflow, which provides a solution-building framework that interconnects tasks and applications throughout the enterprise, to achieve business process automation. Also, through built-in integration with native process automation in Siebel, SAP, Domino, and other major applications, IBM reduces the effort of connecting workflow and content management.

Customer Examples

The examples below illustrate the broad range of solutions that customers have implemented using IBM Content Manager to become more competitive, enhance customer service and improve the bottom line.

First Data Resources

First Data Resources, a unit of First Data Corporation, is the world's largest third party transaction processor, providing a wide set of services for more than 1400 credit and debit card issuers worldwide, representing more than 300 million accounts. These services include card issuance and activation, cardholder statements and correspondence, management reporting, settlement and billing, and risk management. Three years ago, the company installed OnDemand to handle one of those services, archiving cardholder statements and correspondence on behalf of selected large issuers.

The primary users of the system are customer service reps in the card issuer's call center. If a cardholder calls with a question about a charge, or needs a copy of the statement, the rep can instantly retrieve it from First Data's statement archive. The system captures and indexes almost 60 million statements a month, accessible to approximately 2000 users in its client base over a T1 connection. Prior to outsourcing statement archiving to First Data, most banks did it in-house with microfiche, with hard copy retrievals taking up to ten days. The new system allows reps to retrieve statements and correspondence while the cardholder is still on the phone, dramatically raising customer satisfaction as well as lowering labor costs.

Using First Data's system, one issuer is beginning to offer its cardholders self-service access to their own personal statements over the Internet. Security and custom web rendition processing of the AFP format is handled through the card issuer's website, but no human intervention at either First Data or the issuer is required. Registered cardholders can access three months of statements online with 24x7 availability. For the issuer, this represents a premium feature offering competitive advantage, while it saves money in the call center. Web retrieval volumes for one issuer are around 900K per month. In the future, First Data looks to using IBM's AFP web viewing software to provide an end-to-end solution for its clients. The company anticipates that it will archive four billion statements in five years.

Tryg-Baltica

Tryg-Baltica, one of Denmark's largest insurance companies, surveyed its customers and found they were looking for faster and more personalized customer service. Its current operations were typical of traditional paper-driven operations: Call center agents could not access inbound or outbound customer correspondence or claims, resulting in needless

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repetition of facts and questions, frustrating for customers and agents alike. The solution was a new integrated customer and claims application built on a combination of Siebel, IBM Content Manager, and DB2.

Content Manager was used to create a repository and indexes for claims documents, spreadsheets, and customer correspondence. Now customer service representatives can access this information directly from their Siebel desktop and quickly generate outbound correspondence by automatically populating Word templates with customer information from Siebel. The letter is then automatically archived in Content Manager and linked to a Service Request in the Siebel application for future access by any customer service rep. The result is faster, more personalized service – critical to customer satisfaction – as well as significant cost savings. In time savings alone, Tryg-Baltica expects to achieve a payback in three years. The new system also is a key milestone toward its next goal – providing customers with self-service access to their claims and correspondence documents over the web.

DocNet.com

DocNet.com is an application service provider (ASP) that is using content management to fill a common gap in many e-business offerings: high-quality hard copy. DocNet allows manufacturers, financial institutions, and information publishers to distribute content on demand in the form of one-off professionally printed bound documents delivered overnight to the customer. Prime examples include software manuals, maintenance and repair documentation, and market research reports. Increasingly today, much of this information is available to the customer only in digital form, either downloaded or on CD. This information can amount to hundreds of pages, critical to customers. A case in point is VerticalNet, a leader in the rapidly expanding arena of business-to-business e-commerce, hosting 58 online vertical industry marketplaces. VerticalNet represents 350 potential information publishers and over 13,000 suppliers of merchandise and services who will soon have access to this kind of outsourced hard copy distribution by DocNet.

Whether a content provider views hard copy distribution as a cost of doing business or a publishing revenue opportunity, including DocNet's Hardcopy button on VerticalNet or its web site relieves the company of the mechanics of hard copy fulfillment and bookkeeping. DocNet provides the hosting and document management, content licensing, digital hard copy generation and overnight delivery, and e-commerce transaction functionality. The system is built around IBM Content Manager integrated with DB2 and WebSphere Commerce Suite. Content Manager gives information providers the tools to create a "custom bookstore" for technical documentation, even allowing customers to custom-configure demand publications chapter by chapter.

Viewpointe Archive Services

In November 2000, IBM joined with Bank of America and Chase Manhattan Bank to form a new company that promises to speed the exchange of digital check images between participating banks and enable them to deliver check images to customers over the web. Viewpointe Archive Services is creating a massive archive based on a solution that has been in place at Chase for three years, built on a worldwide network of IBM Content Manager OnDemand servers. The new Viewpointe system, initially used by Chase and Bank of America, will capture and index 55 million items per day, and allow online retrieval of customer statements and check images at web-enabled ATMs, at the bank's web site, or at banking center locations.

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Later, Viewpointe will provide a national archive for all items created during banking transactions, and will invite other banks to participate. Check images will be captured at the bank of first deposit when they are cleared, and transmitted simultaneously to two IBM Global Services data centers, which will archive them. Check images will be stored on disk for rapid access for 45 days, and on tape for seven years. Unlike today's clearing process, where checks must be processed twice – at both the payer's and payee's bank – Viewpointe will allow both banks to share the check data and image initially captured, cutting processing costs by as much as 30 percent, as well as providing enhanced customer service and fraud detection. The national archive also eliminates the need for each member bank to install and maintain its own image archive. The system is highly scalable, and has the capability of storing the entire volume of US check images.

Hewitt Associates

Hewitt Associates is a global management consulting firm specializing in HR, and provides outsourced administration of health insurance, 401K, pensions and other employee benefits in 32 countries around the world. Approximately 75% of the Fortune 500 use Hewitt services. Hewitt maintains the largest call center in the United States and Canada for HR benefits, spread over four states. Employees of the company's many clients send large volumes of paper documents, ranging from birth certificates to benefit election forms, to Hewitt for scanning into IBM Content Manager. Each image document is indexed by company and employee Social Security Number. Employees phoning the call center and entering their PIN are transferred to the agent pool serving their company. Agents can call up images from the employee's e-document folder to answer questions easily and effectively.

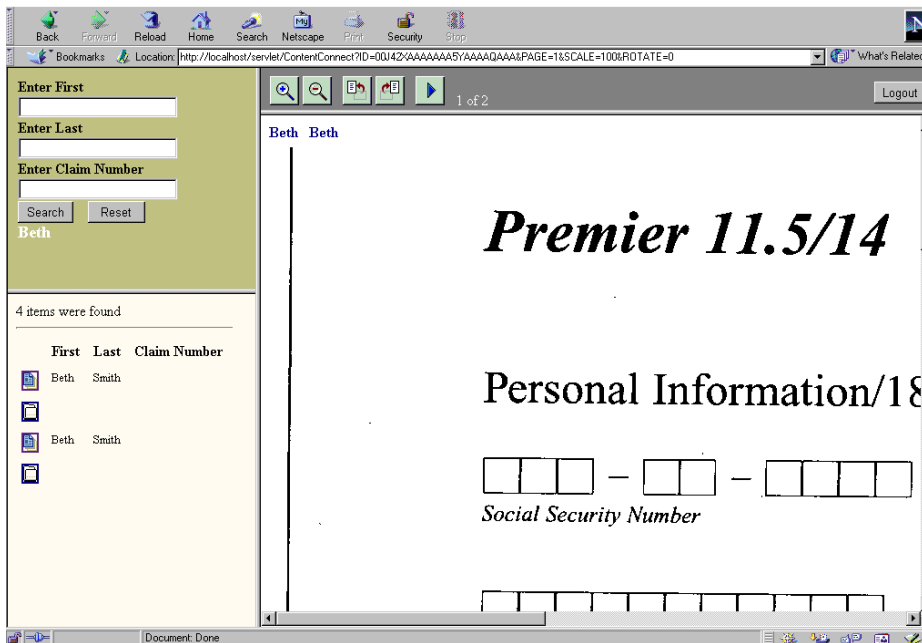


Figure 3. Hewitt combined IBM WebSphere, EIP, and TIFF-GIF conversion to create an “ultra-thin” client for its customers.

In addition to its own call center, Hewitt is now finding that its client companies' own HR departments want access to the same documents. These companies may be hundreds or thousands of miles away from the centralized repository, suggesting an Internet-based solution. To support firewalls on both the Hewitt and client side of the web without requiring desktop upgrades, Hewitt and IBM jointly developed an ultra-thin client using

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IBM WebSphere hosting a custom servlet, Java Server Pages, integrated search components, and a TIFF-to-GIF image converter on the web server. The ultra-thin client requires only a web browser on the desktop; no executable components are downloaded, just HTML.

Now Hewitt's clients can access documents in the repository themselves, quickly and securely. Users must log on with their Content Manager password, and this behind the scenes links to a search template accessible to the user. In this way, users only have access to their own records.

The ease of use with this approach has expanded the application of e-documents beyond the benefits center at Hewitt. Now the company is beginning to offer storage of *any* scanned records in the repository. This expands Hewitt's value to its customers, and paves the way for new business opportunities in the future. What began as an outsourcing convenience for customers is becoming a full-fledged e-business.

Bankers Trust

Global Processing Services is a wholly owned subsidiary of Bankers Trust providing check processing and cash management services for the bank and its customers. Through e-business, GPS can "private label" these services for its customers so that they appear to be performed within the customer's own environment.

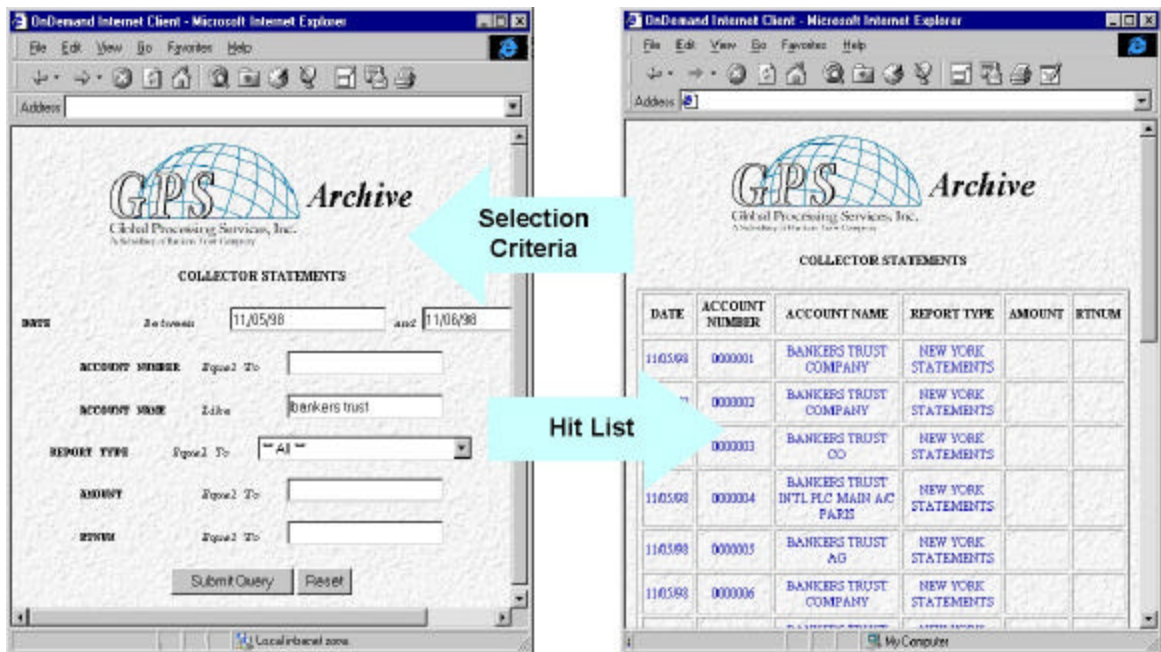


Figure 4. BT's customers search for repository items in OnDemand and retrieve hit lists through a thin client interface.

GPS uses IBM's Content Manager OnDemand as an enterprise archive of multiple document types including computer output and check images using a mix of Windows and web clients. Web-enablement relies on the OnDemand Internet Connection, which provides a web server interface, web templates, and viewer plug-ins for images, Advanced Function Print, and line data computer output. This approach avoids the need to pass Java through the firewall, which can be an issue for banks and other security-conscious institutions.

Using a web browser, authorized GPS customers, as well as the bank's own customer service representatives, can search for, retrieve, and display any item in the archive for which they have permission. One customer uses it to archive images of government forms

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integrated with their lockbox environment. Soon other customers will be able to access images of their own checks directly from GPS's archive, bringing major savings in cost and time.

After passing through the bank's authorization service, network security, and OnDemand security, customers are presented a list of folders in the repository based on their set of permissions. Opening a selected folder presents a search screen, which generates a list of matching items from the repository. Selecting an item from the hit list retrieves it from the repository, invoking the appropriate viewer plug-in based on file type.

The use of e-documents allows GPS to customize and package services for customers according to their specific requirements, and even make it appear as if the services are internal to the customer's environment. It even allows customers to offer GPS services to *their* customers, transparently and with complete security.

Conclusion

Today the e-business vision – connecting everybody, everywhere, on any device, over the Internet – is moving forward with amazing speed. E-Content is proving to be a key component in that vision, as business processes adapt e-business to real-world demands across the enterprise. Access from the desktop to digitized invoices and customer statements, correspondence, business records, and technical documentation – instantly retrievable to a web browser – not only lets companies streamline their internal operations, but allows them to extend key business processes to their customers and trading partners, and grow revenue while they lower costs and improve customer satisfaction.

As a major driving force behind the e-business wave, it makes sense that IBM is the leader in adapting content management to the needs of e-business. IBM Content Manager breaks down the barriers between different types of documents, stores them securely in electronic form, and makes them accessible to any web browser. It also makes content of any type accessible through a common API to the web content management components used to provide personalization and other unique features of e-business. Content Manager repositories integrate tightly with IBM's WebSphere and Lotus Domino – today's leading e-business application platforms – as well as with SAP, the back office application leader, and Siebel, the market leader in the front office. Covering all the bases, look for IBM to make content management a mainstream component of the new e-business landscape.

Bruce Silver